

LATHAM & WATKINS

ATTORNEYS AT LAW

1001 PENNSYLVANIA AVE., N.W.

SUITE 1300

WASHINGTON, D.C. 20004-2505

TELEPHONE (202) 637-2200

FAX (202) 637-2201

PAUL R. WATKINS (1899 - 1973)
DANA LATHAM (1898 - 1974)

CHICAGO OFFICE

SEARS TOWER, SUITE 5800
CHICAGO, ILLINOIS 60606
PHONE (312) 876-7700, FAX 993-9787

HONG KONG OFFICE

SUITE 2205A, 22ND FLOOR
NO. 9 QUEEN'S ROAD CENTRAL
HONG KONG
PHONE + 852-2522-7888, FAX 2522-7008

LONDON OFFICE

ONE ANGEL COURT
LONDON EC2R 7HU ENGLAND
PHONE + 44-171-374 4444, FAX 374 4480

LOS ANGELES OFFICE

533 WEST FIFTH STREET, SUITE 4000
LOS ANGELES, CALIFORNIA 90071-2007
PHONE (213) 485-1234, FAX 891-8763

MOSCOW OFFICE

ULITSA GASHEKA, 7, 9TH FLOOR
MOSCOW 123056, RUSSIA
PHONE + 7-095 785-1234, FAX 785-1238

NEW JERSEY OFFICE

ONE NEWARK CENTER, 16TH FLOOR
NEWARK, NEW JERSEY 07101-3174
PHONE (973) 639-1234, FAX 639-7298

NEW YORK OFFICE

885 THIRD AVENUE, SUITE 1000
NEW YORK, NEW YORK 10022-4802
PHONE (212) 906-1200, FAX 751-4864

ORANGE COUNTY OFFICE

650 TOWN CENTER DRIVE, SUITE 2000
COSTA MESA, CALIFORNIA 92626-1825
PHONE (714) 540-1235, FAX 755-8290

SAN DIEGO OFFICE

701 'B' STREET, SUITE 2100
SAN DIEGO, CALIFORNIA 92101-8197
PHONE (619) 236-1234, FAX 696-7419

SAN FRANCISCO OFFICE

505 MONTGOMERY STREET, SUITE 1900
SAN FRANCISCO, CALIFORNIA 94111-2562
PHONE (415) 391-0600, FAX 395-8095

SILICON VALLEY OFFICE

135 COMMONWEALTH DRIVE
MENLO PARK, CALIFORNIA 94025
PHONE (650) 328-4600, FAX 466-2600

SINGAPORE OFFICE

20 CECIL STREET, SUITE 25-02
THE EXCHANGE, SINGAPORE 049705
PHONE + 65-536-1181, FAX 536-1171

TOKYO OFFICE

INFINI AKASAKA, 8-7-15, AKASAKA, MINATO-KU
TOKYO 107-0052, JAPAN
PHONE + 81-3-423-3970, FAX 3423-3971

EX PARTE OR LATE FILED

April 12, 1999

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Ms. Magalie Roman Salas, Secretary
Federal Communications Commission
The Portals - 445 12th Street, S.W.
TW-A325
Washington, DC 20554

Re: ET Docket No. 98-206; DA 99-494; Diversified Communication Engineering,
Inc., File No. 6001-EX-MR-1998, Call Sign WA2XMY; EX PARTE

Dear Ms. Salas:

This is to advise you that on Thursday, April 8, 1999, and on Friday, April 9, 1999, Merrill Spiegel, Paul Anderson and Joseph Santoru of DIRECTV, Inc. ("DIRECTV"), and the undersigned, also on behalf of DIRECTV, met with Harry Ng and Kim Baum, Satellite & Radiocommunication Division, International Bureau, and Mindy Ginsburg, Deputy Chief, International Bureau; Rebecca Dorch, Deputy Chief, Office of Engineering and Technology ("OET"), Julius Knapp, Chief, Policy and Rules Division, OET, Tom Derenge, Spectrum Policy Branch, OET, Douglas Young, Experimental Licensing Branch, OET, Stevenson Kaminer, Legal Counsel, OET, and Geraldine Matise, also of OET; D'wana Terry, Chief, and Herb Zeiler, Deputy Chief, Public Safety and Private Wireless Division, Wireless Telecommunications Bureau ("WTB"), and Edward Jacobs, Shellie Blakeney and Michael Pollak, also of the WTB.

The attached document, which outlines the issues of discussion, was provided to the participants at these meetings.

An original and four copies of this letter and attachment are enclosed.

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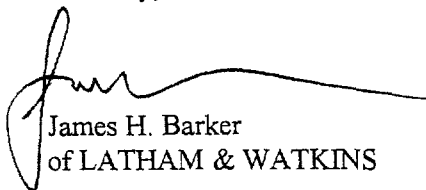
LATHAM & WATKINS

Magalie Roman Salas, Secretary

April 12, 1999

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Sincerely,

A handwritten signature in black ink, appearing to be 'J. Barker', with a long horizontal flourish extending to the right.

James H. Barker
of LATHAM & WATKINS

Enclosure

Introduction



- Northpoint proposes to operate in 12 GHz band, which the Commission has long recognized as the most mission critical band for DBS operations
- The Northpoint system poses a dire interference risk to millions of current and future DBS subscribers who use ubiquitously deployed 18-inch receive antennas to receive multichannel video and audio programming
- The burden is on Northpoint to show an absence of harmful interference with DBS operations
- Northpoint has not shown any reasonable prospect of co-existence with DBS operations at 12 GHz that can justify the Commission allowing Northpoint, via waiver or spectrum allocation, to provide service at 12 GHz

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Overview - Policy



- **Northpoint technology is not novel**
 - *Northpoint can be accommodated in other frequency bands, e.g., LMDS, 38 GHz*
- **Re-introducing sources of terrestrial interference at 12 GHz runs completely counter to the Commission's long-standing efforts to promote DBS service development**
 - *E.g., 1994 Public Notice to terrestrial microwave users*
 - *The DBS service is only now beginning to provide competition to incumbent cable operators*
- **Northpoint interference would be cumulative with NGSO interference at 12 GHz**
- **The DBS service cannot succeed or innovate in the long term in an interference limited environment**
- **Bottom Line: Northpoint operations should not be permitted at 12 GHz even on a secondary basis**

Overview - Technical



- **Technical analysis and current data show Northpoint poses a completely unacceptable interference risk to DBS**
 - *Applying international criteria for acceptable inter-service interference, DIRECTV analysis has shown that the zone of unacceptable interference with DBS operations occupies approximately 50% of Northpoint's proposed service area*
 - *The use of mitigation techniques is impractical and prohibitively expensive for a ubiquitously deployed, consumer friendly DBS service*
- **The data gathered as a result of Northpoint's experiments are highly suspect**
- **Even accepting the data at face value, Northpoint's experiments show severe degrading effect on DBS operations**

Protection of BSS is Essential



- **Quality of service zealously guarded by DBS industry**
 - *Important for customer satisfaction and competitiveness*
 - *DIRECTV has chosen not to sacrifice availability for capacity*
- **Considerable resources devoted to high quality of service**
 - *Availability in rain was and is a major design parameter*
 - *To protect this, DIRECTV very active in NGSO sharing studies*
- **Results of sharing studies**
 - *Agreement reached on protection criteria in JWP 10-11S*
 - *Results directly applicable to proposed Northpoint sharing*
 - *Both NGSO-FSS, Northpoint constitute inter-service sharing*

Fair and Equitable Sharing Criteria - Considerations



- **Relative standing of services**
 - *Proposed service to be secondary*
- **Relationship of the services**
 - *Situation would be inter-service sharing*
- **Take into account any established precedents**
 - *WP 10-11S PDNR on NGSO-FSS/GSO-BSS sharing*
 - *Max 10% unavailability degradation allowed for all NGSO-FSS sources*
- **Establish equal burden on all inter-service systems**
 - *NGSO-FSS studies leaning toward 3 to 5 possible NGSO-FSS systems*
 - *Allocate equal impact to BSS from each inter-service system (2 to 3%)*
 - *Results in a 2 to 3% allocation to the Northpoint system*
- **Recognize accumulated effect of multiple interference sources**
 - *Cap unavailability degradation at 10% from these inter-service sources*
 - *Reduce number of potential NGSO-FSS systems by one*
 - *Allocate this part of interference budget (2 to 3%) to Northpoint*

Relevant NGSO-FSS Sharing Criteria



- **PDNR developed during October 1998 JWP 10-11S meeting**
 - *First criteria developed since deployment of digital BSS*
- **PDNR limits degradation to BSS link performance in rain**
 - *Added interference makes rain outages longer and more frequent*
 - *PDNR limits degradation to 10% of current unavailability (outage hours)*
 - *10% limit is for contributions from all NGSO-FSS systems*
 - *Result is 2 to 3% outage degradation allocated to each system*
- **PDNR limits signal outage caused by brief but high levels of interference**
 - *PDNR declares no outages are allowed under clear sky conditions*
 - *Important for quality of service considerations*

Implications for Northpoint Transmissions



- Propose to limit unavailability degradation to 2% (n=5)
- Results in a required C/I of 28.6 dB or higher
- Equivalent to an epfd of -182.6 dBW/m²/4 kHz
- Note: Northpoint has been changing their link parameters
 - *DIRECTV assumed nominal and reasonable values for the following analysis*

Derivation of Required RSSi



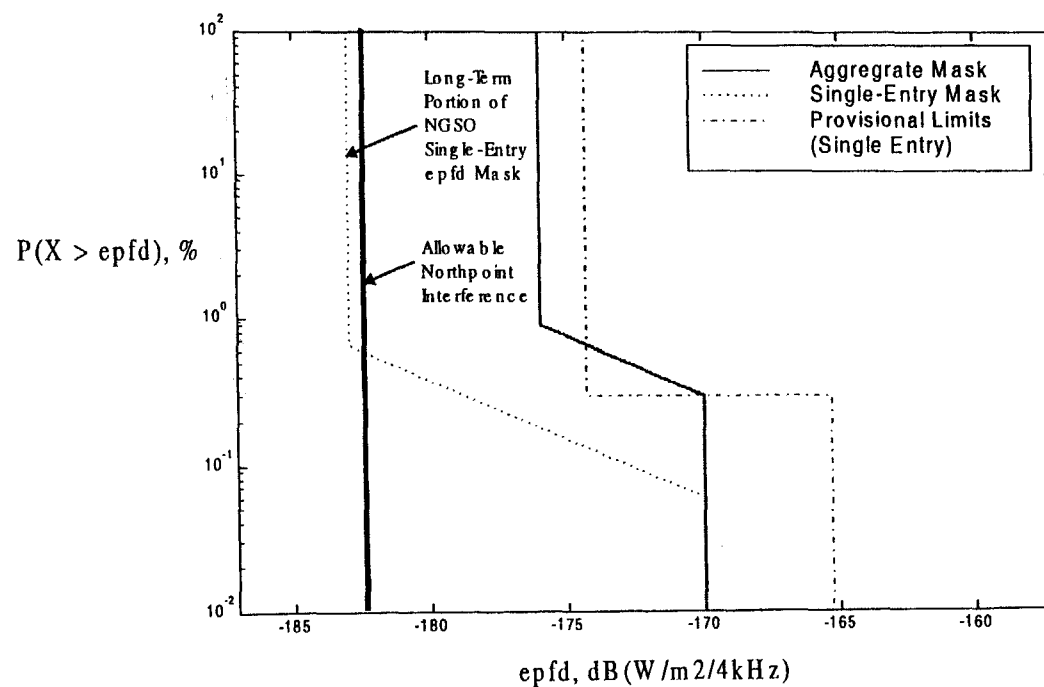
Comparison of Northpoint and DIRECTV Calculations of RSSi

Primary Differences: Assumed DBS C/N, Required C/I

			From Northpoint Technical Annex	US-GSO 1(a) with 0 dB earth antenna station gain toward Northpoint transmitter
Line	Units	Item	Value	Value
1	GHz	Frequency	12.5	12.5
2	dB	DBS Clear Sky C/N(thermal)	11.4	8.9
3	dB/K	DBS G/T	13	13
4	dB	DBS G	34	34
5	K	DBS T	126	126
6	MHz	DBS Bandwidth	24	24
7	dBW	DBS Noise Figure kTB	-133.8	-133.8
8	dB	DBS Pointing Loss	-0.5	-0.5
15	dB	Atmospheric Absorption		-0.2
9	dBW	DBS Received Signal C	-122.9	-125.6
10	dB	DBS C/I Allowed	20	28.6
11	dBW	Allowable Interference	-142.9	-154.2
12				
13	dB	DBS Ant Gain toward horizon	0	0
14	dBW	Allowable RSSI	-142.9	-154.2

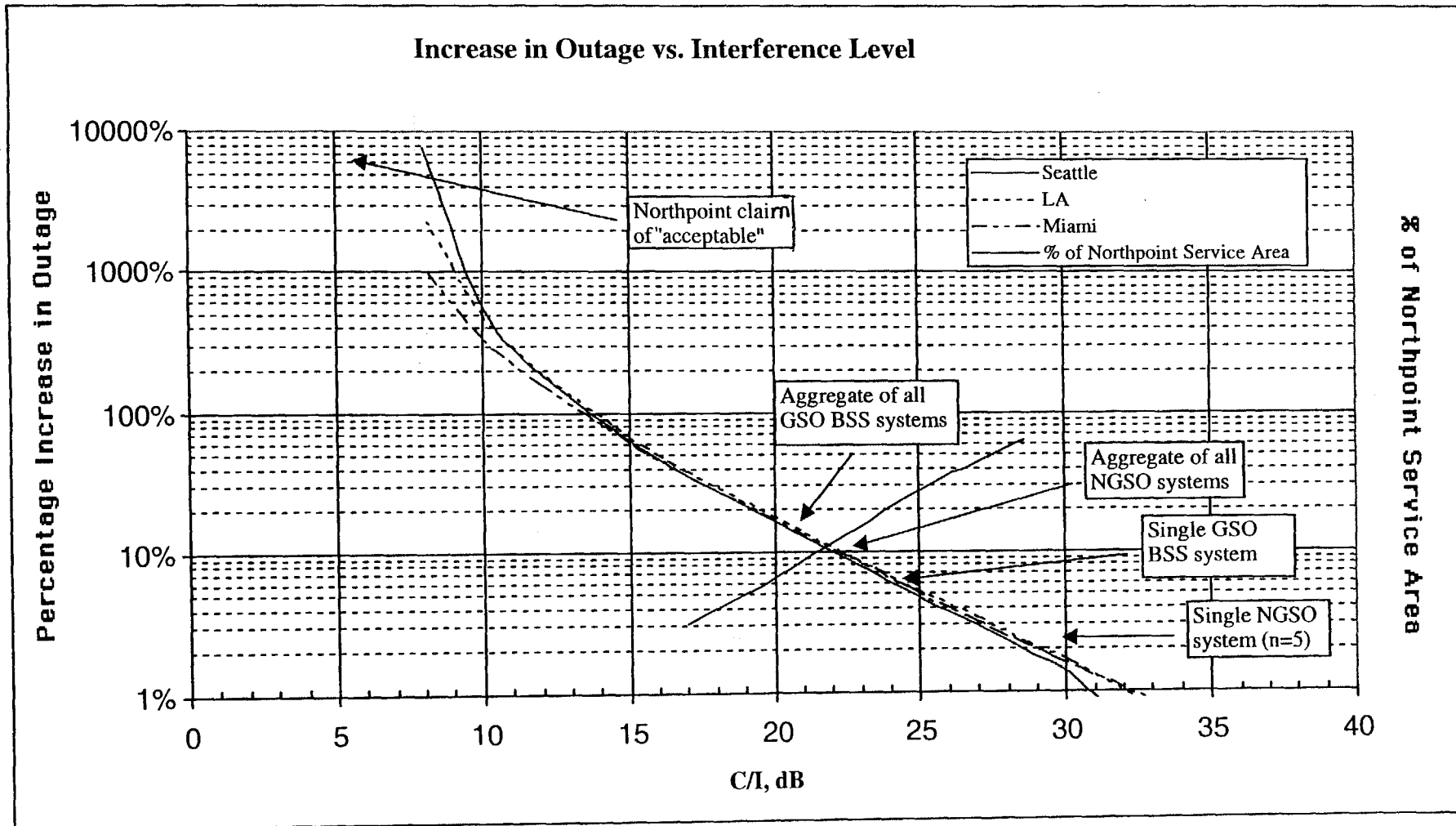
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Comparison of Interference Criteria



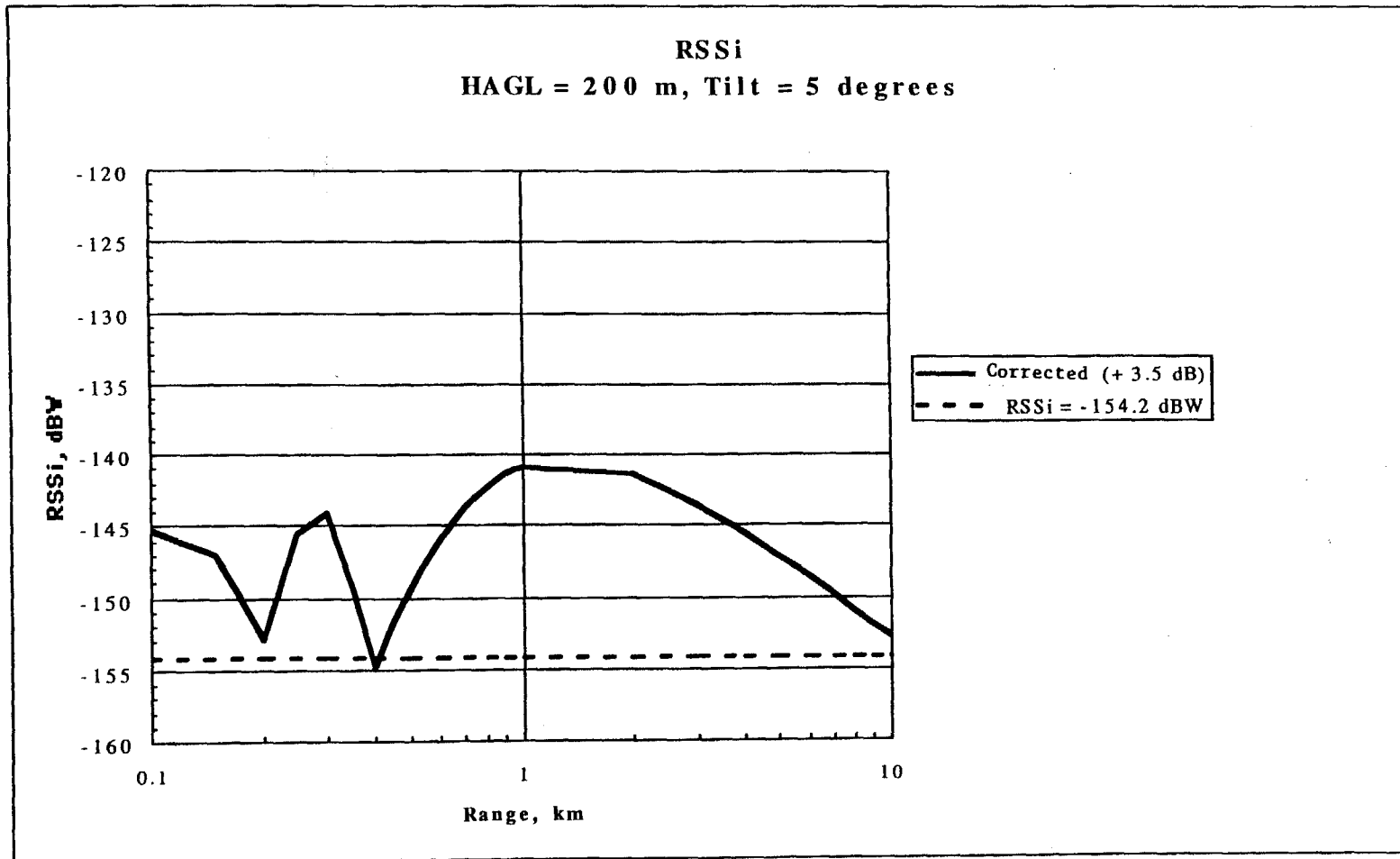
**DIRECTV Proposed Limit for Northpoint Equals
Long Term Portion Of DIRECTV Proposed NGSO Single Entry Mask**

Relative Levels With Respect to Other Interference Sources



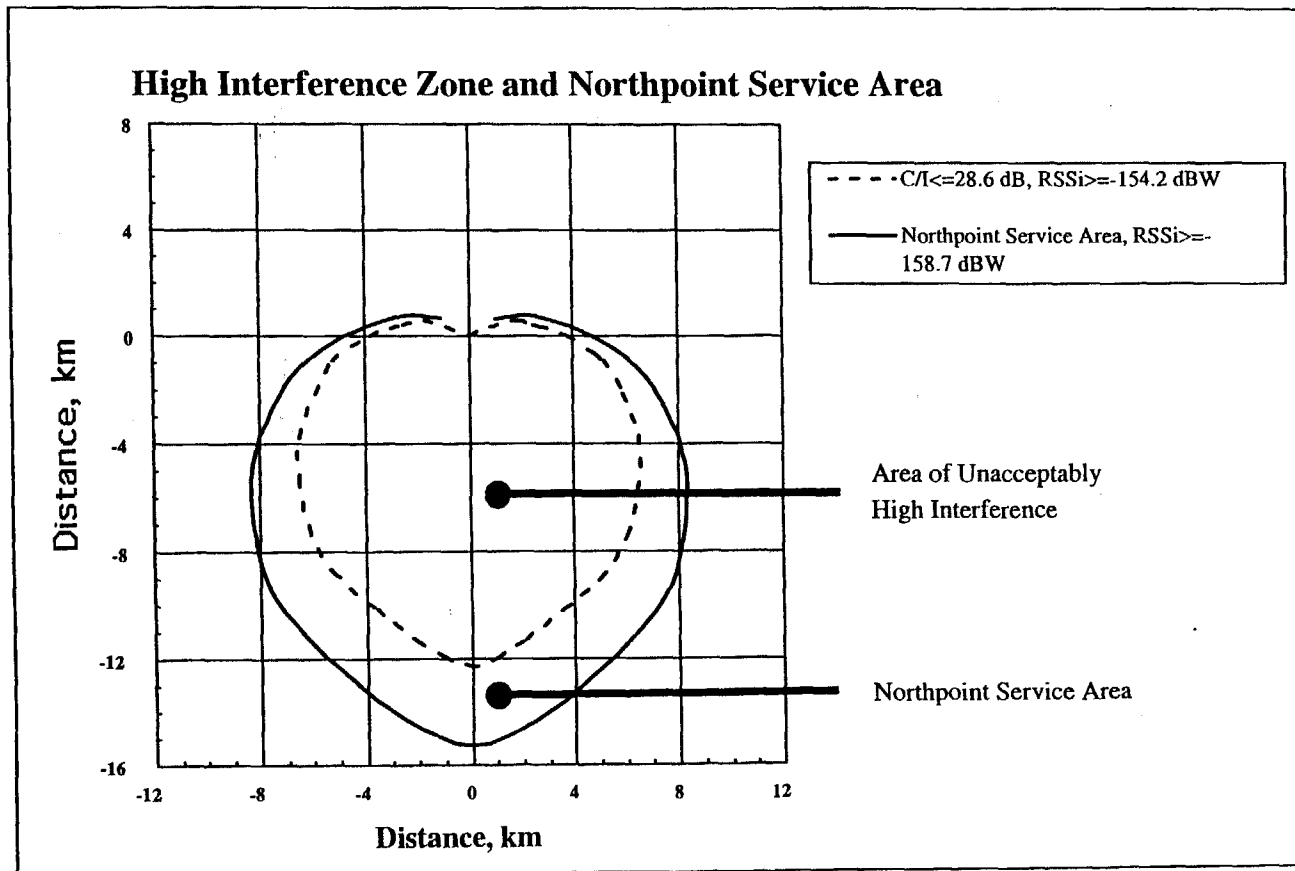
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Required vs Realized RSSi



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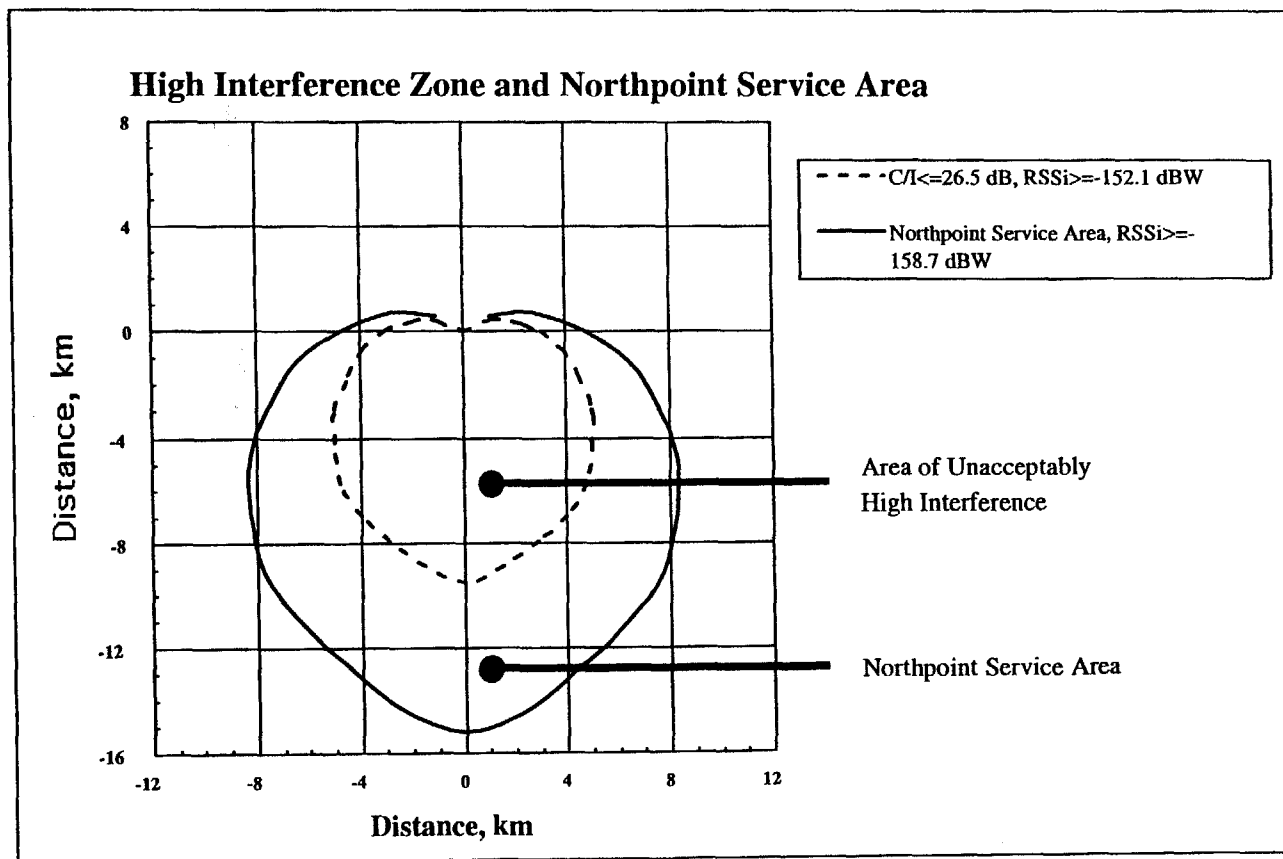
High Interference Zone Within Northpoint Service Area



Seattle, Required $C/I = 28.6 \text{ dB}$ ($n=5$)

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High Interference Zone Within Northpoint Service Area



Seattle, Required $C/I = 26.5 \text{ dB}$ ($n=3$)

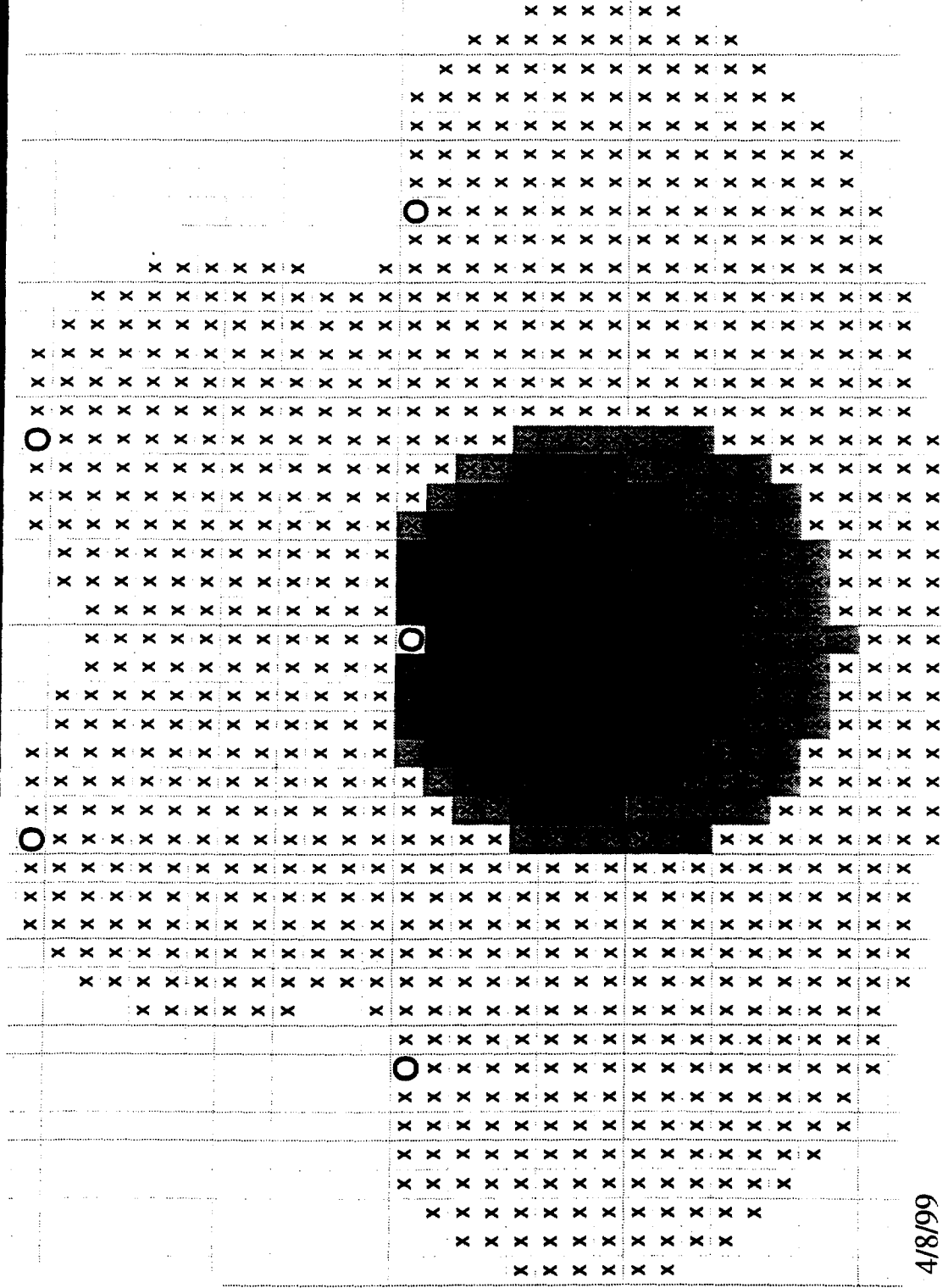
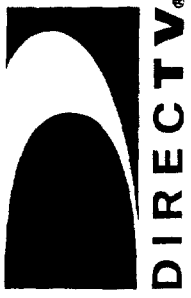
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Estimated Impact From Multiple Northpoint Transmitters



- **Explanation of chart 14 showing impact of multiple (5) transmitters**
 - *Dark shaded area: High interference for a single Northpoint transmitter*
 - *Light shaded area: Northpoint service area for a single transmitter*
 - *O's: Relative transmitter locations of 5 transmitters*
 - *X's: High interference area, 5 transmitters on*
- **These calculations assumed**
 - *Northpoint Service Area RSSI ≥ -158.7 dBW (includes rain fade)*
 - *High interference zone RSSI ≥ -154.2 dBW (clear sky)*
 - *Uses Northpoint link budget on page 6, 2/9/99 filing*
 - *Tower height 150 m, 3 deg. Beam tilt, 25 dBw transmitter, 2.5 dB line loss*
 - *Transmit antenna gain of 10 dBi*

Estimated Impact From Multiple NorthPoint Transmitters



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Interference Effects Seen in Austin Test Data



- **Satellite Receiver (IRD) Signal meter function**
 - *Signal meter was designed as antenna pointing aid*
 - *Reading varies directly with received C/N ratio*
 - *Can detect C/N degradation due to added interfering noise*
 - *For Austin: a drop of 0.6 counts equals a 2% increase in unavailability*
- **Austin Test Data**
 - *Signal meter data should have been taken more accurately*
 - *At all but one site, readings dropped more than 0.6 counts*

Signal Meter Degradation (dssp) Austin, Tx Data



Site No.	Name	sspo	dssp	Unavailability Change
		Signal Meter Units	Signal Meter Units	%
3	Palmer	75.5	12.9	100
1	Hyatt	78.8	11.6	90
7	Palmer*1	80.3	7.1	42
4	American-Statesman	83.2	6.2	33
9	Palmer*3	66.8	6.2	33
12	3rd & Christopher	69.8	4.2	20
13	Barton Creek Mall	83.4	3.2	15
8	Palmer*2	78.2	2.9	14
22	4th St. & San Antonio	78.2	2.8	13
15	IH-35 South	84.8	2.6	12
25	7th St. & Baylor	81.7	2.6	12
26	Southwest Pky 1	81.4	2.3	10
6	Coliseum	80.7	2.3	10
10	TX-DOT	80.6	2.3	10
24	11th St. & Guadalupe	80.2	2.3	10
11	3rd St. & Jewell	87.8	2.2	10
5	Jalisco's	86.0	2.2	10
28	Gains Ranch Rd	80.8	2.2	10
2	Salvation Army	86.1	2.0	9
27	Southwest Pky 2	83.1	2.0	9
16	Dais Ln Hill	88.5	1.9	9
13A	Barton Creek Mall	86.1	1.8	8
19	Glass Rd	82.4	1.8	8
14	Acc Pinnacle	85.4	1.7	8
21	Summit	85.9	1.4	6
29	HEB 1st & WnCannon	80.6	1.4	6
20	Fiesta Shores	81.2	1.3	6
18	Guerrero	80.1	1.2	5
13A-2	Barton Creek Mall	86.3	0.9	4
23	7th St. & Guadalupe	86.0	0.7	3
17	Thaxton	85.8	0.1	<1%

Note:
Unavailability change
is an estimate

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Proper Roles, Analysis vs Test



- **Analysis: Determines proper interference criteria**
 - *Models used to determine long term impact on availability*
 - *Difficult to test for - requires many months to years to assess impact*
- **Testing: Determine Feasibility with Multi-path, Multiple Transmitters**
 - *Should accurately assess expected multi-path environment*
 - *Should address multiple transmitters with multi-path*
- **Northpoint has done neither of the above**
 - *Used testing to determine their proposed interference criteria - misleading*
 - *Did not carefully and accurately assess multi-path environment*
 - *Did not test with multiple transmitters*

Summary



-
- **DBS industry in U.S. must maintain and improve quality of service, in order to compete with cable as it converts to digital**
 - **Extensive international work on NGSO-FSS sharing has established sharing criteria consistent with needs of BSS**
 - **Northpoint proposed interference levels are completely inconsistent with this new criteria**
 - **Northpoint is not viable when required to meet the same interference standards to be imposed on any one NGSO system**
 - **Conclusion: Northpoint incapable of sharing DBS band**